

CLAIMS

What is claimed is:

- 5           1.    An anti-microbial-adhesion pharmaceutical composition for administration to a patient in need of such a composition comprising an effective amount of an isolated adhesion inhibitory fraction from *Vaccinium* juice as an active ingredient and a pharmaceutically acceptable carrier or diluent, said isolated fraction  
10           having
- (a)   a molecular weight of  $\geq 14,000$ ; and
  - (b)   anti-adhesion activity against *H. pylori*;
  - (c)   an elemental analysis of carbon 43-51%,  
15       hydrogen 4 - 5%, no nitrogen, no sulfur and no chlorine;
  - (d)   an nuclear magnetic resonance (NMR) line spectrum as set forth in Figures 2A and 2B;
  - (e)   an ultraviolet spectrum with an absorption  
20       peak at 280 nm in neutral or acidic pH solution which is absent in alkali solutions;
  - (f)   coaggregation reversal and coaggregation inhibition activity against oral bacteria and
  - (g)   an adhesion inhibitory activity against P  
25       fimbriated bacteria; and
- wherein the concentration of the isolated adhesion inhibitory fraction is between 1  $\mu$ g and 10 mg per milliliter (ml).
- 30           2.    A method of treating *H. pylori* infection in a patient in need of such treatment by administering to the patient an effective amount of the composition as set forth in claim 1.

3. A method of isolating a water extract fraction from a juice of berries of the *Vaccinium* plant genus exhibiting adhesion inhibitory activity against bacteria by the steps of

- 5 (a) dialyzing the juice extensively against double distilled water using dialysis tubing with a 14,000 molecular weight cut-off;
- (b) lyophilizing the dialysate;
- (c) fractionating the lyophilized dialysate
- 10 on a polyacrylamide resin column; and
- (d) eluting the fraction from the column with water.

15 4. The method of claim 3 wherein the fraction is eluted from the column with ammonia.

20 5. The method of claim 3 wherein the fraction eluted in step (d) is further purified by passage over a Fractogel column.

6. The method of claim 3 wherein the juice is cranberry juice.

25 7. The method of claim 6 wherein the cranberry juice is a commercially available preparation selected from the group consisting of juice and juice concentrate.

30 8. The method of claim 3 wherein the juice is blueberry juice.

9. An antibody directed against an isolated adhesion inhibitory water extract fraction from cranberry juice having

- 35 (a) a molecular weight of  $\geq 14,000$ ;

(b) an elemental analysis of carbon 43 - 51%, hydrogen 4 - 5%, no nitrogen, no sulfur and no chlorine;

5 (c) a nuclear magnetic resonance (NMR) line spectrum as set forth in Figures 2A and 2B;

(d) an ultraviolet spectrum with an absorption peak at 280 nm in neutral or acidic pH solution which is absent in alkali solutions;

10 (e) an adhesion inhibitory activity against P fimbriated bacteria; and

(f) coaggregation reversal and coaggregation inhibition activity against oral bacteria.

15 10. An antibody as set forth in claim 9 selected from the group consisting of monoclonal and polyclonal antibody.

20 11. A fortified food composition providing anti-microbial-adhesion activity comprising a suitable food carrier and an effective amount of an isolated adhesion inhibitory water extract fraction from *Vaccinium* having

(a) a molecular weight of  $\geq 14,000$ ;

(b) coaggregation reversal and coaggregation inhibition activity against oral bacteria

25 (c) an elemental analysis of carbon 43-51%, hydrogen 4 - 5%, no nitrogen, no sulfur and no chlorine;

(d) a nuclear magnetic resonance (NMR) line spectrum as set forth in Figures 2A and 2B;

30 (e) an ultraviolet spectrum with an absorption peak at 280 nm in neutral or acidic pH solution which is absent in alkali solutions; and

(f) an adhesion inhibitory activity against P fimbriated bacteria.

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12. The composition as set forth in claim 11 wherein the food carrier is a fruit juice.

13. The composition as set forth in claim 12 wherein the fruit juice is cranberry juice.

14. An adhesion inhibitory fraction from a juice of berries of the *Vaccinium* plant genus exhibiting coaggregation reversal and coaggregation inhibition activity against bacteria isolated by:

(a) dialyzing the juice extensively against double distilled water using dialysis tubing with a 14,000 molecular weight cut-off;

(b) lyophilizing the dialysate;

(c) fractionating the lyophilized dialysate on a polyacrylamide resin column; and

(d) eluting the fraction from the column with water.

15. The method of claim 14 wherein the fraction is eluted from the column with ammonia.

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